WASHINGTON DEPARTMENT OF ECOLOGY

ENVIRONMENTAL ASSESSMENT PROGRAM

FRESHWATER MONITORING UNIT

STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 35G060

STATION NAME: Joseph Creek near Mouth

WATER YEAR: 2011

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Introduction

Watershed Description

Joseph Creek is the largest tributary of the Grande Ronde River, originating in the northeastern corner of Oregon on the south flank of the Blue Mountains and the North Wallowa Mountains; flowing north into Washington State. Less than 20% of the Joseph Creek drainage lies within Washington. Joseph Creek contains a spring run of Chinook salmon, bull trout, and a very strong run of wild summer steelhead. Land use in this watershed is primarily ranching and grazing.

Gage Location

This station is located on Washington Department of Fish and Wildlife property approximately 2.5 miles upstream from the mouth on the access road leading to the Chief Joseph Wildlife area at Green Gulch.

Table 1.

Drainage Area (square miles)	545
Latitude (degrees, minutes, seconds)	46° 01' 46" N
Longitude (degrees, minutes, seconds)	117° 00' 57" W

Discharge

Table 2. Discharge Statistics.

Mean Annual Discharge (cfs)	233
Median Annual Discharge (cfs)	50
Maximum Daily Mean Discharge (cfs)	1740
Minimum Daily Mean Discharge (cfs)	16
Maximum Instantaneous Discharge (cfs)	2190
Minimum Instantaneous Discharge (cfs)	14
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	645
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	19
Number of Days Discharge is Greater Than Range of Ratings	0
Number of Days Discharge is Less Than Range of Ratings	0

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

Narrative

Spring runoff peaked in early April, 2011. This was the highest flow reported since the station was installed during the summer of 2003. Eight discharge measurements were conducted, ranging from 18 to 339 cfs.

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	1.0
Weighted Rating Error (% of discharge)	11.1
Total Potential Error (% of discharge)	12.1

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	801	10	802	11
Period of Ratings	4/11/09-12/9/10	12/10/10-1/12/11	1/13/11-4/9/11	4/10/11-9/30/11
Range of Ratings (cfs)	9.2 to 2900	11 to 2900	9.2 to 2900	14 to 2900
No. of Defining Measurements	17	2	17	6
Rating Error (%)	10.7	8.1	10.7	12.1

Rating Table No.				
Period of Ratings				
Range of Ratings (cfs)				
No. of Defining Measurements				
Rating Error (%)				

Narrative

Rating 10: Leaf litter buildup at the control which led to channel fill in mid November to early December.

Rating 802: A mid January precipitation event led to channel scour.

Rating 11: Seasonal runoff in early April led to channel scour.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	3.96
Maximum Recorded Stage (feet)	9.26
Range of Recorded Stage (feet)	5.3
Number of Un-Reported Days	25
Number of Days Qualified as Estimates	43
Number of Days Qualified as Unreliable Estimates	0

Narrative

Unreported days were due to ice-impacted data. Estimated days were based on the periods following the ice-impacted data without a verified manual stage reading. A 15-day data gap was filled with data from Ecology station 35B150 Tucannon River at Marengo.

Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	Slope Conveyance
Range of Modeled Stage (feet)	8.0 to 10.0
Range of Modeled Discharge (cfs)	1300 to 2900
Valid Period for Model	4/13/08 to 9/30/11
Model Confidence	9.4%

Surveys

Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date
Station, X-section, Long.	8/30/2011

Activities Completed

Replaced DCP board due to malfunctioning logger and radio.